obvious to combine the references to achieve an invention equivalent to that defined by applicants' claims. Applicants respectfully disagree for the following reasons.

Because dependent claims are patentable for at least the same reasons as the independent claim from which they ultimately depend, applicants will limit the remarks in the present response to pointing out how independent Claims 1, 23, 25, and 26 distinguish over the cited art. Note that Claims 2-8 and 12 are all ultimately dependent on independent Claim 1; and Claim 24 is dependent on independent Claim 23. However, it must be emphasized that while applicants choose not to address other specific differences between the art cited and each of the dependent claims, these differences clearly do exist and are not taught or suggested by the art cited. It is therefore applicants' position that all of the dependent claims recite subject matter that differs in a non-obvious way from the disclosure of the prior art cited.

With respect to the rejection of Claims 1-8 and 12, and 25, applicants note that independent Claim 1 recites the following elements:

> (a) a flexible substrate having a rear surface and a front surface, and including a plurality of flexible conductive traces, said plurality of flexible conductive traces being adapted to connect to an electrical system of a vehicle to receive an electrical current therefrom, said plurality of flexible conductive traces being disposed in at least one of the following locations:
>
> (i) on the rear surface of the flexible substrate;
>
> (ii) on the front surface of the flexible substrate; and
>
> (iii) within an internal portion of the flexible substrate;
>
> (b) a plurality of solid-state light emitting devices mounted in a spaced-apart array on the front surface of the flexible substrate, said array extending in two orthogonal directions, said plurality of solid-state light emitting devices being electrically connected to the plurality of flexible conductive traces and energized by the electrical current, emitting light outwardly and away from said flexible substrate; and
>
> (c) a transparent flexible envelope that extends over the plurality of solid-state light emitting devices, providing protection against abrasion, the light emitted by the plurality of solid-state light emitting devices passing through the transparent flexible envelope, said transparent flexible envelope not covering the rear surface of the flexible substrate, so that the rear surface of the flexible substrate is adapted to mount on an exterior surface of a vehicle, said flexible substrate, said spaced-apart array, and said transparent flexible envelope being able to conform to a non-planar curve of the exterior surface.

To paraphrase, Claim 1 recites a flexible substrate that (1) has flexible conductors disposed either on the rear surface of the flexible substrate, on the front surface of the flexible substrate, or within an internal portion of the flexible substrate; (2) has a two dimensional orthogonal array of light sources mounted on the front surface of the flexible substrate, such that light is emitted outwardly and away from the flexible substrate; and, (3) has a flexible envelope that covers the array, but not the

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rear surface of the flexible substrate. Parker and Goodrich disclose flexible substrates, but neither the flexible substrate disclosed by Parker, nor the flexible substrate disclosed by Goodrich is equivalent to the flexible substrate claimed by applicants.

First, there is no teaching or suggestion by Parker of a flexible substrate that includes flexible conductors disposed on the rear surface of the flexible substrate, on the front surface of the flexible substrate, or within an internal portion of the flexible substrate. Note that flexible printed circuit 19 disclosed by Parker is disposed ***adjacent*** to the rear surface of flexible substrate, but not ***on*** the rear surface. As described by Parker, the flexible printed circuit 19 cannot be disposed on the flexible substrate, because if it were, the ability to turn circuits on and off by depressing buttons 5 to controllably cause panel 8 (i.e. the flexible substrate) to contact the flexible circuit would be lost. Thus, modifying the position of flexible printed circuit 19 so that the flexible printed circuit is disposed on the rear surface of the flexible substrate would result in a non functional apparatus that is incapable of carrying out the function for which it was intended. MPEP 2143.01 specifically provides that "if proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification."

Parker discloses other conductors, such as those that connect light sources 9 to a power source. However, such conductors cannot be considered to be disposed on the rear surface of the flexible substrate, on the front surface of the flexible substrate, or within an internal portion of the flexible substrate. Parker clearly teaches that light sources 9 are disposed along the edges of the flexible light panels, such that the conductors extend away from the flexible substrate. There is no disclosure that the conductors coupling light sources 9 actually contact the flexible substrate.

Further, the flexible substrates disclosed by Parker (i.e., panels 21, 24, and 26) are not equivalent to the flexible substrates defined in applicants' claims, because none of the prior art flexible substrates have light sources that are mounted ***onto*** the front surface of the flexible substrate. Also, none of the flexible substrates disclosed by Parker have light sources that are mounted in the two dimensional orthogonal array, as recited by applicants' claims. The flexible substrates disclosed by Parker also do not include light sources that emit light outwardly and away from the flexible substrates. Note that only light sources 9, not light sources 31, are actually mounted to the flexible substrates disclosed by Parker. Thus, even though light sources 31 are in an orthogonal array extending in two directions, those light sources are not equivalent to the light sources recited in applicants' claims, because light sources 31 in the Parker disclosure ***are not*** mounted onto the flexible substrate. It should therefore be apparent that the flexible substrates disclosed by Parker are not equivalent to the flexible substrate recited in Claim 1.

Goodrich discloses flexible substrate 4, on which an array of LEDs 3 is disposed. However, light transmissive envelope 1 covers both the front ***and rear surface*** of flexible substrate 4. Thus, the

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flexible substrate disclosed by Goodrich is not equivalent to the flexible substrate recited by applicants in Claim 1, because the claim recites that the rear surface of the flexible substrate is not covered by the flexible envelope.

For the combination of Goodrich and Parker to achieve an invention equivalent to that defined by applicants' Claim 1, the flexible substrate disclosed by Goodrich would need to be modified so that the flexible envelope does not cover the rear surface of the flexible substrate. The resulting panel would then need to be employed in place of panels 21, 24, or 26 of Parker. However, there does not appear to be any basis for concluding that the required modification of Goodrich would be obvious to a person of ordinary skill, or that it would be obvious to use such a modified flexible light panel in the invention of Parker. There is simply no motivation to make the modification and to combine the references cited to achieve the invention of Claim 1 in the present application.

Goodrich discloses a flexible substrate that is fully encapsulated by a PVC encasement. Goodrich's light panel is mounted using suction cups disposed on the front of the light panel. Indeed, encapsulating the entire flexible substrate with a PVC encasement material provides better support. Since Goodrich explicitly teaches that a feature of his invention is its ability to be self supporting, modifying the PVC encasement so that the rear surface of the flexible substrate is not supported by the PVC encasement is contrary to Goodrich's objective and teaching, because such a modification would clearly reduce the light panel's ability to be self supporting. The only basis for modifying Goodrich in such a fashion appears to be hindsight in view of applicants' claimed invention, which does not represent a valid basis for supporting a *prima facie* case of obviousness.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference(s) or to combine reference teachings to produce the claimed invention. Second, there must be a reasonable expectation of success in making such a combination. Finally, the prior art reference (or references when combined) must teach or suggest all elements or steps recited in the claim. *In Re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Further, with respect to determining obviousness, MPEP § 2141 indicates that the following basic considerations must be adhered to:

> (A) The claimed invention must be considered as a whole;
>
> (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
>
> (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
>
> (D) Reasonable expectation of success is the standard with which obviousness is determined.

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For the reasons set forth below, applicant submits that the prior art fails to establish a *prima facie* basis for the rejection of the claims.

There does not appear to be any motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, that would lead one of ordinary skill to modify Goodrich to achieve a flexible substrate that includes a protective envelope, which does not cover the rear surface of the flexible substrate. As is made clear in MPEP § 2141, the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention. Other than hindsight, there does not appear to be any reason or motivation to modify Goodrich's device so that the protective envelope does not cover the rear of the flexible substrate. Applicants specifically teach that an adhesive is preferably employed to couple the rear surface of the flexible substrate to the surface of a vehicle. Therefore, it is not desirable for the protective envelope to cover the rear surface, which would cause the panel to be less flexible and less able to conform to a curved surface. Goodrich discloses suction cups mounted onto a front surface of the protective envelope, to enable the flexible LED panels to be mounted to a vertical surface. No other mounting orientation is suggested, and it is not clear why it would be obvious to use an adhesive to mount the rear surface of the Goodrich panel directly to a vehicle.

There also does not appear to be any motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings to produce the claimed invention. Note that to achieve the present invention, the flexible panels disclosed by Parker need to be replaced by the flexible panels disclosed by Goodrich (modified as described above). Replacing the panels disclosed by Parker (which are illuminated by light sources directing light ***into*** the panel, and light sources disposed ***behind*** the panel) with Goodrich's panels (which include light sources mounted on a front surface of the panel and direct light outward and away from the panel) appears to directly contradict MPEP 2143.01, which specifically provides that "if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." The relevant section from the MPEP is provided below.

> THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE
>
> If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The

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> primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.).

The principle of operation of Parker's panels is that light is emitted from the panel because light sources 9 are disposed on edge surfaces, and are oriented to direct light inward into the panel. Parker's panels include light transition regions and light extracting deformities (see column 7, lines 15-59). Parker never suggests or employs light sources disposed on a front surface of the panel so that light is directed outwardly and away from the panel. The array of light sources 31 disclosed by Parker direct light ***through*** the illuminated panel, and those light sources are not mounted ***onto*** the illuminated panel.

In contrast, the principle of operation of Goodrich's panels is that light sources are disposed on a front surface of the panel so that light is directed outwardly and away from the panel. Replacing the panels disclosed by Parker with a panel disclosed by Goodrich would change the principle of operation of Parker with respect to how light is emitted from an illuminated panel. According to MPEP 2143.01, such a combination represents a modification that is not sufficient to produce a *prima facie* case of obviousness.

Because there appears to be no basis for modifying Goodrich's panels as required except through hindsight, and because a combination of Goodrich and Parker changes the principle of operation of the Parker reference, the cited art is not sufficient to achieve a *prima facie* case of obviousness with respect to claim 1. Since dependent claims are patentable for at least the same reasons as claims from which they depend, all claims ultimately dependent on Claim 1 are also patentable. Accordingly, the rejection of Claims 1-8 and 12 under 35 U.S.C.§ 103(a) as being unpatentable over Parker in view of Goodrich should be withdrawn.

Referring now to Claim 23, applicants note that Claim 23 recites a method of using a flexible substrate having the structural properties recited in Claim 1. Thus, Claim 23 also includes the elements of a flexible substrate having an upper and a lower surface, the lower surface being mounted to a vehicle, and an array of light emitting devices that are mounted to the upper surface of the flexible substrate, such that light emitted from the array is directed outwardly and away from the flexible substrate. A protective cover overlies the light sources, but not the lower surface of the flexible substrate. Electric conductors are disposed on at least the upper surface, the lower surface, or inside the flexible substrate. The cited art cannot support a *prima facie* case of obviousness in regard

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to the recitation of Claim 23, for the same reasons discussed above with respect to Claim 1 (i.e. because the only basis for modifying Goodrich's panels appears to be hindsight, and because the suggested combination of Goodrich and Parker improperly changes the principle of operation of the Parker reference). Since dependent claims are patentable for at least the same reasons as claims from which they depend, Claim 24, which depends from Claim 23, is also patentable. Accordingly, the rejection of Claims 23 and 24 under 35 U.S.C.§ 103(a) as being unpatentable over Parker in view of Goodrich should be withdrawn.

Turning now to Claims 25 and 26, each recites a flexible light panel for use on an external surface of a vehicle. The flexible panels each include a flexible substrate having an upper and lower surface, an array of light devices disposed on the upper surface to emit light outwardly and away from the flexible substrate, and a protective cover that extends over the light sources, but not over the lower surface of the flexible substrate. As discussed in detail above, the flexible panels disclosed by Parker are not equivalent because the light sources disclosed by Parker are not mounted on the front or upper surface of the flexible substrate, to emit light outwardly and away from the flexible substrate. The flexible panel disclosed by Goodrich is not equivalent to applicants' claimed invention because Goodrich's panels have an encapsulating envelope that covers all surfaces of the flexible substrate, front and rear. The cited art cannot support a *prima facie* case of obviousness because the only basis for modifying Goodrich's panels appears to be hindsight, and because the suggested combination of Goodrich and Parker improperly changes the principle of operation of the Parker reference with respect to how light is emitted from the panels (i.e., outwardly and away from the flexible substrate in the instant claims, rather than into or from behind as disclosed by Parker). Accordingly, the rejection of Claims 25 and 26 under 35 U.S.C.§ 103(a) as being unpatentable over Parker in view of Goodrich should be withdrawn.

Rejected of Claims 13-17, 19, 20 and 22 under 35 U.S.C. § 103(a)

The Examiner has rejected Claims 13-17, 19, 20 and 22 under 35 U.S.C.§ 103(a) as being unpatentable over Parker (U.S. Patent No. 5,895,115) in view of Goodrich (U.S. Patent No. 5,162,696), further in view of Bennion (U.S. Patent No. 4,774,434). The Examiner indicates that it would have been obvious to incorporate the negative and positive traces disclosed by Bennion into the combination of Parker and Goodrich applied as discussed above, thus achieving an equivalent invention. Applicants respectfully disagree for the following reasons.

Claim 13 recites a flexible panel for mounting to an exterior surface of a vehicle. The recited panel includes a flexible substrate having positive and negative flexible conductive traces, which are used to energize a plurality of solid-state light emitting devices mounted on the outer surface of the flexible substrate in a spaced-apart array extending in two orthogonal directions. The light emitting devices are disposed such that when energized, they emit light outwardly and away from the flexible

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substrate. A flexible cover overlies the plurality of solid-state light emitting devices, but does not overlie a rear surface of said flexible substrate.

Parker does not disclose an equivalent flexible substrate, because the light sources disclosed by Parker are not oriented to emit light outwardly and away from the flexible substrate. Because any change to the operating principle controlling how light is emitted from Parker's flexible panels is prohibited per MPEP 2143.01 (which specifically provides that "if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious), it would not be obvious to modify Parker as suggested by the Examiner, to achieve the present claimed invention.

Goodrich discloses a flexible substrate that is fully encapsulated by a PVC encasement. There appears to be no basis other than hindsight to modify Goodrich to achieve an envelope that doesn't cover the rear of the flexible substrate. In the recited invention, the encapsulating envelope does not extend to a rear surface of the flexible substrate, so that panel remains flexible and so that the rear surface can be coated with an adhesive and attached to a vehicle, as is described in applicant's specification. Goodrich's light panel is mounted using suction cups disposed on the front of the light panel. Indeed, encapsulating the entire flexible substrate with a PVC encasement material provides a greater amount of support – which makes the panel to inflexible to achieve the conforming fit to the exterior curved surface of a vehicles as required for applicants' invention. Goodrich explicitly teaches that a feature of his invention is its ability to be self supporting. Therefore, modifying the PVC encasement so that the rear surface of the flexible substrate is not supported by the PVC encasement is contrary to Goodrich's objective and teachings, as such a modification would clearly reduce the light panel's ability to be self supporting. The only basis for modifying Goodrich in such a fashion appears to be hindsight, which does not represent a valid basis for supporting a *prima facie* case of obviousness.

Bennion does not disclose light emitting devices mounted on the outer surface of the flexible substrate in a spaced-apart array extending in two orthogonal directions. There does not appear to be any basis for concluding that it would be obvious to modify Bennion's logo/decorative type design as shown in FIGURE 4 to achieve the recited spaced-apart array extending in two orthogonal directions. The recited array does not appear to have any decorative utility, and as such modifying Bennion's decorative design to achieve the recited array would render Bennion's device unsuitable for its intended purpose, i.e. to provide a lighted decorative design on an article of clothing such as a T-shirt.

Clearly, none of the art cited discloses a flexible substrate having a spaced-apart array (extending in two orthogonal directions) of light sources encapsulated by a protective coating mounted to its upper surface, such that the light sources emit light outwardly and away from the flexible substrate, with no protective coating covering the rear surface of the flexible substrate.

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Further, modifying any of the cited art to achieve the recited invention appears to be contrary to the disclosure of each reference. As noted above, the required modification to Parker appears to violate MPEP 2143.01, because such a modification would change the disclosed operative principle that Parker employs to illuminate a panel. The required modification to Goodrich also appears to violate MPEP 2143.01, because such a modification would result in a display less capable of being self supporting, and the modification would result in a display unsuitable for its intended purpose. Finally, modifying the decorative lighted design of Bennion appears to violate MPEP 2143.01, because such a modification would result in a display having an array not suitable for decorative purposes. Claim 13 is therefore patentable over the cited art. Since dependent claims are patentable for at least the same reasons as claims from which they depend, all claims ultimately dependent on Claim 13 are also patentable. Accordingly, the rejection of Claims 13-17, 19, 20 and 22 under 35 U.S.C.§ 103(a) as being unpatentable over Parker in view of Goodrich, further in view of Bennion should be withdrawn.

In consideration of the preceding Remarks, it will be apparent that all claims in this application are patentable. The Examiner is therefore requested to pass this application to Issue without further delay. In the event that any issues remain unresolved, the Examiner is invited to telephone applicants' attorney at the number listed below.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the U.S. Postal Service in a sealed envelope as first class mail with postage thereon fully prepaid addressed to: Director of Patents and Trademarks, Arlington, VA 22202, on October 11, 2002.

Kathy Parris

Date: October 11, 2002
RMA/MCK:

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